

According to a first aspect, the present invention provides a liquid supply assembly for use with spraying apparatus such as a spray gun comprising a reservoir for a liquid to be sprayed, the reservoir having a first end, a second end spaced from the first end, an end wall at the first end, a side wall extending from the end wall to the second end, an opening in the end wall inwardly of the side wall, and a cap member releasably secured to the reservoir around the opening, the cap member having a spout providing a fluid outlet communicating with the reservoir through the opening, wherein the spout is connectable to a spray gun for connecting the reservoir to a fluid inlet of the spray gun, and the reservoir can be detached from the cap member for adding fluid to the reservoir through the opening.

As used herein, the term "liquid" refers to all forms of flowable materials that can be applied to a surface using a spray gun (whether or not they are intended to colour the surface) including (without limitation) paints, primers, base coats, lacquers, varnishes and similar paint-like materials as well as other materials such as adhesives, sealers, fillers, putties, powder coatings, blasting powders, abrasive slurries, mould release agents and foundry dressings which may be applied in atomised or non-atomised form depending on the properties and/or the intended application of the material and the term "liquid" is to be construed accordingly.

By this invention, the fluid outlet of the reservoir is provided by the spout of the separate cap member releasably secured to the reservoir. As a result, the opening in the reservoir can be oversized relative to the fluid outlet and the reservoir can be detached from the cap member to add liquid to the reservoir through the opening without dis-assembly of the reservoir. In this way, liquid can be added to the reservoir in a simple manner so that the risk of spillage and/or contamination of the liquid may be reduced.

This is of particular benefit if the capacity of the reservoir is less than the volume of liquid required for a particular application. For example, when spraying a

The reservoir may be supplied empty for the user to fill with liquid and attach the cap member to connect the reservoir to the spray gun. Where the reservoir is collapsible, it may be collapsed to a compact form for storage and transportation.

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Alternatively, the reservoir may be supplied pre-filled with liquid and the opening sealed until it is desired to use the liquid. For example, the opening may be sealed using a removable closure or a rupturable membrane that is broken when the cap member is attached to the reservoir. In another arrangement, the cap member may be adapted to seal the opening until it is desired to use the liquid. For example, the cap member may be provided with a removable seal at the base of the socket to close the spout. Alternatively, a rupturable membrane may be provided across the end of the spout that is broken when the spout is attached to the spray gun.

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Pre-filling may be employed for liquids that can be packaged and stored until required without degrading. Thus, pre-filling may be especially useful for liquids that can be supplied ready to use (i.e. without requiring modification to match the colour to an existing colour). For example, base coats in standard colours of a specified shade and/or primers or lacquers that can be supplied in a non-activated form and activated (if necessary) by suitable means such as by exposure to a source of light (ultraviolet) or electrical energy when required. Whichever arrangement is employed, the reservoir can be re-filled in use by detaching the reservoir from the cap member, adding liquid through the opening and re-attaching the reservoir to the cap member.

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According to a second aspect, the present invention provides a liquid supply assembly for use with spraying apparatus such as a spray gun comprising a reservoir for a liquid to be sprayed, the reservoir having a first end, a second end spaced from the first end, an end wall at the first end, a side wall extending from the end wall to the second end, an opening in the end wall inwardly of the side

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5 wall, and a cap member having a base and a spout, the cap member being releasably secured to the reservoir by engagement of complementary screw threads on the base and on the end wall around the opening, and the spout extending from the base away from the reservoir, the spout providing a fluid outlet of reduced cross-section relative to the opening and being connectable to a fluid inlet on the spray gun for connecting the reservoir to the spray gun, and wherein the reservoir can be detached from the cap member for adding fluid to the reservoir through the opening.

10 Preferably, the reservoir is collapsible as liquid is withdrawn in use. For example, the end wall may be comparatively rigid compared to the side wall. In this way, the end wall provides stability and allows the reservoir to be gripped without collapsing when attaching the reservoir to and detaching the reservoir from the cap member, and the side wall is collapsible in an axial direction  
15 towards the end wall as liquid is withdrawn from the reservoir in use.

In one arrangement, the cap member has a socket provided with an internal screw thread engageable with an external screw thread on a spigot extending around the opening in the end wall. In another arrangement, the marginal edge of the  
20 opening has an internal screw thread engageable with an external screw thread on the cap member.

According to a further aspect of the present invention, there is provided in combination a reservoir for supplying a liquid to a spray gun or the like and a cap  
25 member for connecting the reservoir to the spray gun, the reservoir having a first end, a second end spaced from the first end, an end wall at the first end, a side wall extending from the end wall to the second end, a fast-fill opening in the end wall inwardly of the side wall through which liquid can be added to the reservoir, the opening being oversize relative to the flow requirements when the reservoir is  
30 connected to the spray gun in use, and a cap member having a base and a spout, the cap member being releasably secured to the reservoir by engagement of

complementary formations on the base and on the end wall around the opening, and the spout extending from the base away from the reservoir, the spout providing a fluid outlet of reduced cross-section relative to the opening and being connectable to a fluid inlet on the spray gun for connecting the reservoir to the spray gun, and wherein the reservoir can be detached from the cap member for  
5 adding fluid to the reservoir through the opening.

By providing the reservoir with an oversize, fast-fill opening, the addition of liquid to the reservoir is facilitated in a simple manner that reduces the risk of  
10 spillage.

The invention will now be described in more detail, by way of example only, with reference to the accompanying drawings, wherein:

15 **Brief Description of Drawings**

**Figure 1** is a perspective view of a prior art spray gun;

**Figure 2** is an exploded isometric view of the component parts of the paint  
20 reservoir shown in Figure 1;

**Figure 3** is a perspective view of the assembled paint reservoir shown in Figure 2;

**Figure 4** is a longitudinal section through the paint reservoir shown in  
25 Figure 3;

**Figure 5** shows separation of the component parts of the paint reservoir of Figure 3 after use.

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- 5 spout providing a fluid outlet for connection to the spray gun. In this way, the reservoir can be detached from the cap member allowing liquid to be added to the reservoir through the central opening in a simple manner with reduced risk of spillage. Furthermore, by locating the opening centrally of the available space, the size of the opening can be maximised. Moreover, by arranging the outlet of the cap member coaxial with the opening, the reservoir is aligned with the central longitudinal axis of the spray gun so that balance, handling of the spray gun is not adversely affected.
- 10 It will also be appreciated that the exemplary embodiments described herein are intended to illustrate the diverse range and application of the invention and that features of the embodiments may be employed separately or in combination with any other features of the same or different embodiments.
- 15 Moreover, while the exemplary embodiments described and illustrated are believed to represent the best means currently known to the applicant, it will be understood that the invention is not limited thereto and that various modifications and improvements can be made within the spirit and scope of the invention as generally described herein.

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## CLAIMS

1. A liquid supply assembly for use with spraying apparatus such as a spray gun comprising a reservoir for a liquid to be sprayed, the reservoir having a first end, a second end spaced from the first end, an end wall at the first end, a side wall extending from the end wall to the second end, an opening in the end wall inwardly of the side wall, and a cap member releasably secured to the reservoir around the opening, the cap member having a spout providing a fluid outlet communicating with the reservoir through the opening, wherein the spout is connectable to a spray gun for connecting the reservoir to a fluid inlet of the spray gun, and the reservoir can be detached from the cap member for adding fluid to the reservoir through the opening.
2. The assembly of claim 1 wherein the opening in the reservoir is oversize relative to the spout.
3. The assembly of claim 1 or claim 2 wherein the reservoir is collapsible as liquid is withdrawn.
4. The assembly of claim 3 wherein the side wall is flexible in comparison to the end wall so as to be capable of deforming to collapse the reservoir in an axial direction from the second end towards the first end.
5. The assembly of claim 4 wherein the reservoir is provided with a comparatively-rigid base at the second end such that the reservoir can be inverted and stood on the base for adding liquid through the opening in the end wall.
6. The assembly of any preceding claim wherein the reservoir is formed in one piece.

7. The assembly of claim 5 wherein the base and side wall are formed in one piece with the end wall being formed as a separate piece that is secured to the side wall.
- 5 8. The assembly of claim 7 wherein the base and side wall form an open topped container and the end wall forms a lid for the container.
9. The assembly of claim 8 wherein the lid is permanently secured to the container.
- 10 10. The assembly of claim 9 wherein the lid is welded or adhesively bonded to the container.
11. The assembly of claim 8 wherein the lid is releasably secured to the container.
- 15 12. The assembly of claim 11 wherein the lid is clamped to the container.
13. The assembly of any preceding claim wherein the cap member is a screw-fit on the reservoir.
- 20 14. The assembly of any one of claims 1 to 12 wherein the cap member is a snap-fit on the reservoir.
- 25 15. The assembly of claim 13 wherein the cap member comprises a base defining a socket with an internal screw thread engageable with an externally threaded spigot bounding the opening in the reservoir.
- 30 16. The assembly of claim 13 wherein the opening in the reservoir has an internal screw thread and the cap member has a base provided with an externally threaded portion engageable with the internal screw thread.

17. The assembly of claim 2 wherein the spout has a diameter less than half the diameter of opening.
- 5 18. The assembly of claim 17 wherein the spout has a diameter less than a third the diameter of the opening.
19. The assembly of claim 18 wherein the spout has a diameter less than a quarter the diameter of the opening.
- 10 20. The assembly of claim 19 wherein the opening has a diameter of 50-60 mm and the spout has a diameter of 10-15 mm.
21. The assembly of any preceding claim wherein the reservoir has a central longitudinal axis and the opening is located centrally on the longitudinal axis.
- 15 22. The assembly of claim 21 wherein the spout is coaxial with the opening.
23. The assembly of any preceding claim wherein the cap member is releasably connectable to the spraying apparatus.
- 20 24. The assembly of claim 23 wherein the cap member and spraying apparatus are provided with co-operating bayonet type formations.
- 25 25. The assembly of claim 24 wherein the spraying apparatus is provided with a socket to receive the spout and the bayonet type formations are engageable to retain the spout in the socket.
26. The assembly of claim 25 wherein the bayonet type formations are engageable within the socket.
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27. The assembly of claim 26 wherein the spout is provided with opposed bayonet lugs at the free end that are received in bayonet grooves in the socket.
28. The assembly of claim 25 wherein the bayonet type formations are engageable externally of the socket.
29. The assembly of claim 28 wherein the socket has an external flange co-operable with a pair of hook members extending from the cap member on opposite sides of the spout.
30. The assembly of any preceding claim wherein the cap member includes a filter for removing any unwanted solid particles contained in the liquid withdrawn from the reservoir.
31. The assembly of claim 30 wherein the filter is located in the spout.
32. The assembly of claim 30 wherein the filter is located in the cap member to extend across the inner end of the spout.
33. The assembly of any preceding claim wherein the reservoir is supplied pre-filled with liquid and the opening sealed until it is desired to use the liquid.
34. The assembly of claim 33 wherein the opening is sealed using a removable closure or a rupturable membrane.
35. The assembly of claim 34 wherein the membrane is broken when the cap member is attached to the reservoir.
36. The assembly of claim 33 wherein the cap member is adapted to seal the opening until it is desired to use the liquid.

37. The assembly of claim 36 wherein the cap member is provided with a removable element to close the spout.

5 38. The assembly of claim 36 wherein a rupturable membrane is provided across the outer end of the spout.

39. The assembly of claim 38 wherein the membrane is ruptured when the spout is attached to the spraying apparatus.

10 40. A liquid supply assembly for use with spraying apparatus such as a spray gun comprising a reservoir for a liquid to be sprayed, the reservoir having a first end, a second end spaced from the first end, an end wall at the first end, a side wall extending from the end wall to the second end, an opening in the end wall inwardly of the side wall, and a cap member having a base and a spout, the cap member being releasably secured to the reservoir by engagement of  
15 complementary screw threads on the base and on the end wall around the opening, and the spout extending from the base away from the reservoir, the spout providing a fluid outlet of reduced cross-section relative to the opening and being connectable to a fluid inlet on the spray gun for connecting the reservoir to the  
20 spray gun, and wherein the reservoir can be detached from the cap member for adding fluid to the reservoir through the opening.

25 41. The assembly of claim 40 wherein the reservoir is collapsible as liquid is withdrawn in use.

42. The assembly of claim 40 or claim 41 wherein the reservoir has a central longitudinal axis and the opening and spout are arranged coaxially with respect to the longitudinal axis.

30 43. The assembly of any one of claims 40 to 42 wherein the screw threads on the reservoir and cap member require more than one complete turn to secure the

reservoir, and the cap member is releasably connectable to the spray gun by means requiring less than one complete turn.

5 44. In combination, a reservoir for supplying a liquid to a spray gun or the like and a cap member for connecting the reservoir to the spray gun, the reservoir having a first end, a second end spaced from the first end, an end wall at the first end, a side wall extending from the end wall to the second end, a fast-fill opening in the end wall inwardly of the side wall through which liquid can be added to the reservoir, the opening being oversize relative to the flow requirements when the reservoir is connected to the spray gun in use, and a cap member having a base and a spout, the cap member being releasably secured to the reservoir by engagement of complementary formations on the base and on the end wall around the opening, and the spout extending from the base away from the reservoir, the spout providing a fluid outlet of reduced cross-section relative to the opening and being connectable to a fluid inlet on the spray gun for connecting the reservoir to the spray gun, and wherein the reservoir can be detached from the cap member for adding fluid to the reservoir through the opening.

20 45. The combination of claim 44 wherein the reservoir is collapsible in use as liquid is withdrawn.

46. The combination of claim 44 or claim 45 wherein the reservoir has a base at the second end and is free-standing on the base.

25 47. The combination of claim 46 wherein the base, side wall and end wall are permanently joined together.

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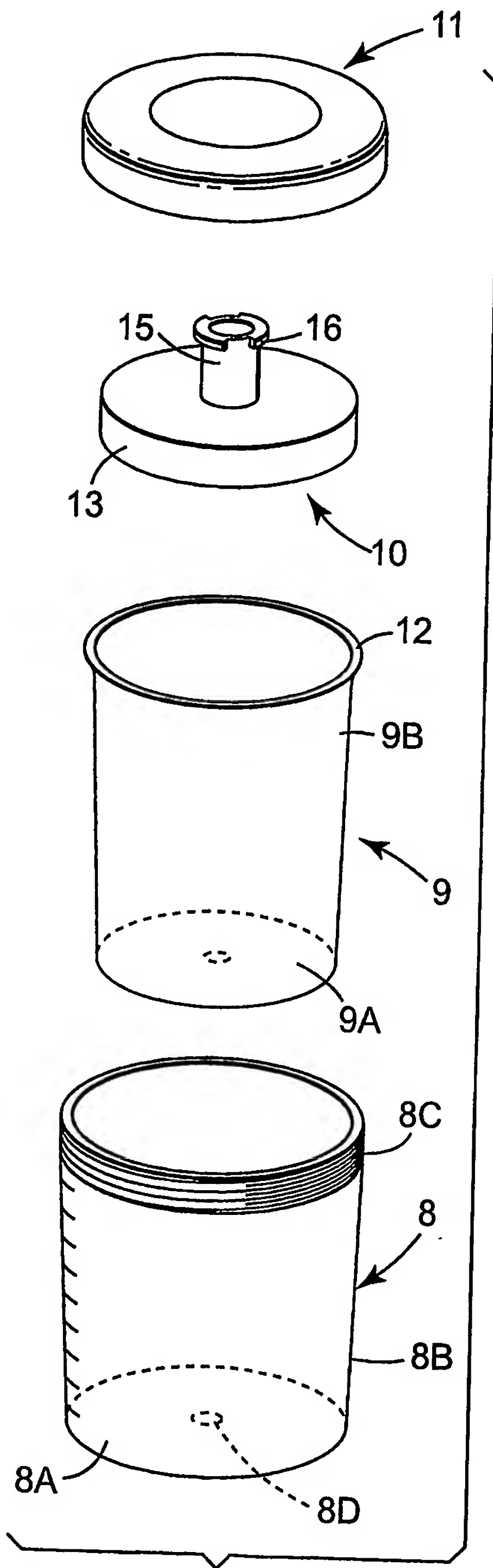


FIG. 2

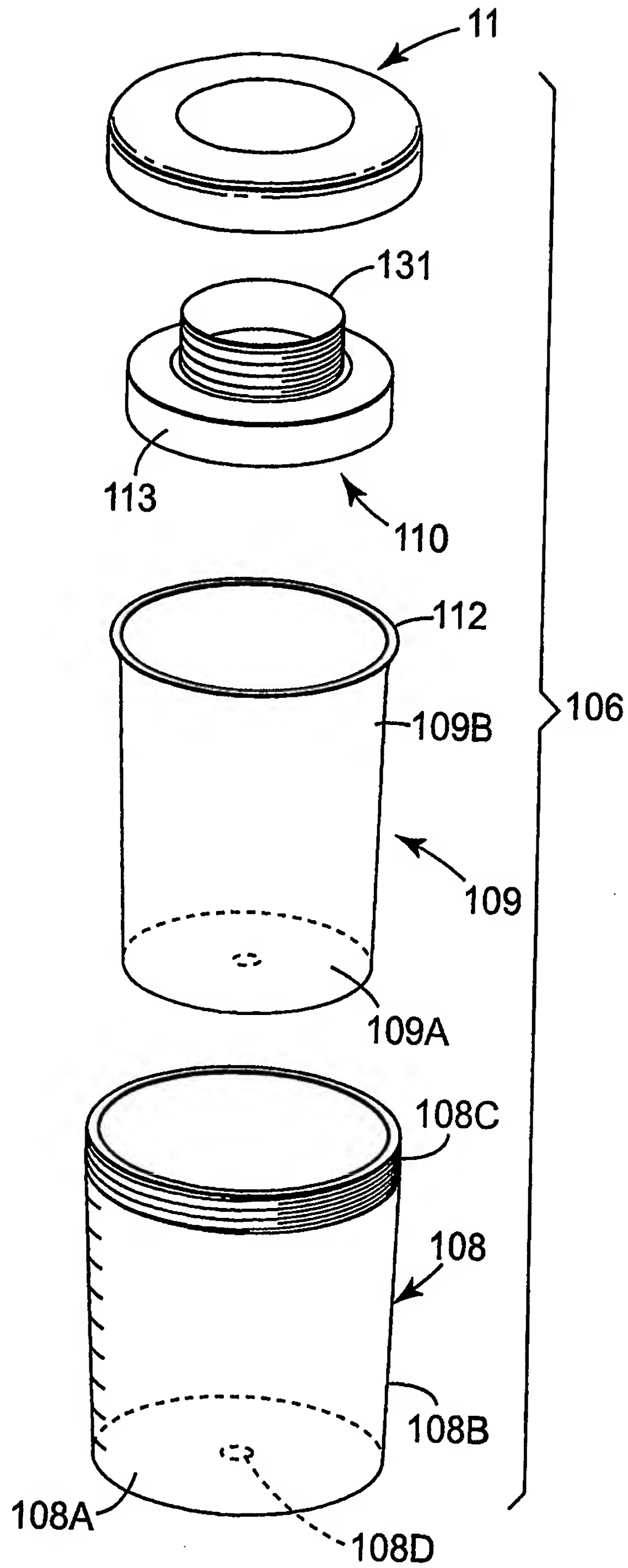


FIG. 8